Realtime Operating System

A Real Time OS ensures tasks are completed within strict time constraints, perfect for systems where delays are not acceptable. It is used in critical situations where precise timing is necessary, such as controlling robots, medical devices, or air traffic systems.

How it works:

- RTOS's handle tasks on a specific schedule. If a task is late, it could cause a serious issue (like a missed deadline).

For ex : VxWorks, FreeRTOS, systems used in cars, airplanes, or medical devices.

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Types of RTOS:

- **Hard RTOS** : Missing a deadline leads to a system failure. Example: Airbag deployment in cars, pacemakers.
- **Soft RTOS** : Missing a deadline degrades performance but doesn't cause failure. Example: Live video streaming, online gaming.
- **Firm RTOS** : Occasional deadline misses are acceptable but should be rare. Example: Industrial automation, robotics.